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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-----------------------|---------------------|------------------|
| 09/682,388 | 08/28/2001 | Donald A. Shiffler II | PRS077 | 5684 |

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EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,388

Applicant(s)

SHIFFLER ET AL.

Examiner

Sikha Roy

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informality:

Page 3 line 16 'carbon is a solid state' should be replaced with --carbon in a solid state--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S.

Patent 5,025,490 to Tamura in view of U. S. Patent 5,993,996 to Firsich.

Tamura discloses (column 1 lines 55-65, column 5 lines 33-41) a vacuum tube (cathode ray tube) having an electrode unit 4 coated with electrically conductive graphite paste dispersed in phenolic resin. Tamura further discloses that the electrode unit connected to a common potential line for the anode voltage of the vacuum tube acts as a capacitor reducing undesirable electrification.

Claim 1 differs from Tamura in that Tamura does not exemplify the coating comprised of carbonized resin.

Firsich in analogous art of electrode materials discloses (column 3 lines 52-65) carbonized resin as suitable carbon electrode. Firsich further discloses that during carbonization the phenolic compact shrinks uniformly without cracks or deformation and produces isomorphic porous carbon network with good electrical conductivity, robust mechanical properties and high surface area which are properties suitable for electrodes acting as capacitors.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include carbonized resin coating on the electrode unit of Tamura as suggested by Firsich for providing isomorphic porous carbon network with good electrical conductivity, robust mechanical properties and high surface area.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,025,490 to Tamura and U. S. Patent 5,993,996 to Firsich and in view of U. S. Patent 4,442,165 to Gebhardt et al.

Claim 2 differs from Tamura and Firsich in that Tamura and Firsich do not exemplify the coating material comprised of thin film of pyrocarbon material.

Gebhardt et al. in relevant art of low-density carbon foam composite discloses (column 2 lines 1-20, Fig.1) forming a layer 14 of pyrolytic carbon by using hydrocarbon penetrating and covering the carbon foam material 12. It is further disclosed that the pyrolytic carbon increases the strength of the material(column 1 lines 46,47).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to cover the porous carbonized resin of the electrode unit of Tamura and

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Firsich by depositing pyrolytic carbon as taught by Gebhardt et al. for increasing the strength of the electroconductive material of the electrode.

Claims 3,4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,025,490 to Tamura and U. S. Patent 5,993,996 to Firsich and in view of U. S. Patent 4,442,165 to Gebhardt et al.

Referring to claim 3 Tamura, Firsich and Gebhardt et al. disclose the electrode with graphite paste is coated with phenolic resin carbonized by baking (heating at a high temperature) and is deposited with pyrocarbon by pyrolysis through vapor deposition of hydrocarbon at a specified temperature and pressure. Regarding the limitation of baking the collector in a vacuum oven to remove water it is known in the art as evidenced by U. S. Patent 3,462,289 to Rohl et al. (column 4 lines 8-12) to subject the material to higher baking temperature to reduce the volatiles remaining.

Regarding claim 4 Firsich discloses (column 6 lines 31-34) the carbonization is performed at a temperature of about 700 and 1000°C more preferably 800 to 850°C.

Regarding claim 5 Tamura discloses the coating made of phenolic resin.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U. S. Patent 4,335,327 to Waugh et al. discloses X-ray tube target with anode having pyrolytic amorphous carbon coating. U. S. patent 5,656,885 to Kohno et al. discloses a CRT having a carbon layer. The following prior art references

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are cited to show the state of the art with respect to the method of forming porous vitreous carbon.

U. S. Patent 4,241,104 to Torbet.

U. S. Patent 4,263,268 to Knox et al.

U. S. Patent 4,609,972 to Edeling et al.

U. S. Patent 5,876,658 to Takeda

U. S. Patent 5,965,297 to Fanteux et al.

Contact Information

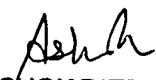
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879


ASHOK PATEL
PRIMARY EXAMINER